DIRECTORATE GENERAL, CRPF
EAST BLOCK-7, SECTOR-1, R.K PURAM, NEW DELHI-66
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No. B.V-7-C/2026-27-C (R/Relay)-QR CELL Dated, the 24 Aug'2026

Subject: - REQUEST FOR COMMENTS OF STAKEHOLDERS /OEM/FIRMS ON DRAFT QRs & TDs OF "RADIO RELAY EQUIPMENTS" REGARDING.

The Draft QRs/TDs of "**Radio Relay Equipments**" are attached as **Appendix 'A'**. The OEMs/Vendors are requested to forward information of the product, which they can offer and also forward correct specifications of their product against each parameter. Only complied or not complied remarks will not be accepted. The firms are also requested to furnish the following details: -

- Whether you are OEM/Vendor?
- If vendor, details of OEM required.
- Authorization certificate from OEM.

2. The required information/details may please be forwarded at the following addresses by 18 **Sep'2026**.

Communication Directorate, CRPF
East Block-7, Sec-1, R.K. Puram, New Delhi-110066
Email: comncell@crpf.gov.in

3. An early response is requested.

(Megh Raj)
DIG (Equipment)
Communication & IT Branch
Directorate General, CRPF

Draft: QRs/TDs of Radio Relay (MCRR/HCRR) Equipment

S.N.		Parameters	Specifications	Trial Directives
1.	**LONG RANGE FULL DUPLEX NLOS WIRELESS RADIO (UHF FREQUENCY BAND)**			
(A)	**ODU (OUT DOOR UNIT)**			
	(i)	(a) Radio Type	Point to Point Trans-Receiver & Self Repeater to operate in NLOS Environment	BOO will check Physically
		(b) Radio Topology	Base Radio, Remote Radio and Self Repeater (Selectable)	
	(ii)	Frequency	320 MHz to 470MHz	Firm will submit OEM Certificate
	(iii)	Band Spread	150 MHz	Firm will submit OEM Certificate
	(iv)	Transmit Power	Minimum 4W in Total or better	Firm will submit OEM Certificate
	(v)	RF Ports	2 Nos. [Trans-receive]	Firm will submit OEM Certificate
	(vi)	RF Technology	TX and RX Diversity for Better Performance. MIMO for High Data Rate	Firm will submit OEM Certificate
	(vii)	RF Channel Bandwidth	Narrow band – 1.25, 1.75, 2.5 & 3 MHz Wide band – 5, 7, 8 MHz Ultra-Wide – 10, 16 MHz	Firm will submit OEM Certificate
	(viii)	Data Rate	BR: 50 Mbps (same Radio Upgradable up to 80 Mbps) RR: 10 Mbps (same Radio Upgradable up to 20 Mbps)	Firm will submit OEM Certificate
	(ix)	Modulation	COFDM or similar	Firm will submit OEM Certificate
	(x)	Duplex Technology	TDD (Time Division Duplex)	Firm will submit OEM Certificate
	(xi)	Constellation	Adaptive QPSK to 64 QAM	Firm will submit OEM Certificate
	(xii)	Error Correction	LDPC (Low Density Parity Check)	Firm will submit OEM Certificate
	(xiii)	Security	AES 256 Bit FIPS 140-2 Approved	Firm will submit OEM Certificate
	(xiv)	TRANSEC	Must support Static Frequency Hop for transmission security from interception and jamming. The radio must support minimum 08 pre-fixed channels and must dynamically select between pre-fixed channel between the operation	Firm will submit OEM Certificate

	(xv)	Order Wire [Engineering port]	3/6 mm Audio Jack, Audio Channel Full Duplex [Hotline]. Help as Antenna Alignment Tool	BOO will check Physically, Firm will submit OEM Certificate
	(xvi)	Interface	RF: 2 x N-Type or Similar Data: 10/100 RJ45 PoE	BOO will check Physically
	(xvii)	Spectrum	In-Built Spectrum scanning and also interface to check interference level to allocate the noise free channel	Firm will submit OEM Certificate, BOO will check Physically
	(xviii)	Split Configuration	ODU and IDU, to be of Same OEM	Firm will submit OEM Certificate
	(xix)	Humidity	0 to 90% or better	Firm will submit Certificate of Govt. Lab or NABL/ ILAC accredited Lab
	(xx)	Enclosure	IP 67 or better	Firm will submit Certificate of Govt. Lab or NABL/ ILAC accredited Lab
	(xxi)	Temperature	-20 to + 55 ^{0} C or better	Firm will submit Certificate of Govt. Lab or NABL/ ILAC accredited Lab
(B)	**IDU (In Door Unit)**			
	(i)	Voice	Total 8 Voice Port [8 Port FXO or 8 Port FXS]	BOO will check Physically
	(ii)	Interface	1 x PoE 2 x Ethernet	BOO will check Physically
	(iii)	**L2**		
		(a) VLANs	Should Support VLAN Tagging.	Firm will submit OEM Certificate
		(b) QoS	Support Basic QoS	Firm will submit OEM Certificate
	(iv)	**Power**		
		(a) Power Source	DC 12 /24 /48 VDC or 220-230 V AC Mains	BOO will check Physically
		Power Consumption	≤35 W	Firm will submit OEM Certificate
	(v)	**Management**		
		(a) Management	(a) SNMP based management (b) Installation, Configuration, Fault management through EMS (Local and Remote)	Firm will submit OEM Certificate
		(b) Protocol	SNMP, HTTP web based	Firm will submit OEM Certificate

		(c) Firmware	Should have facility to Software Upgrade	Firm will submit OEM Certificate
2.	**(A) Hi-Gain Antenna**			
	(i)	Frequency	320 to 470MHz (as per radio channel)	Firm will submit OEM Certificate
	(ii)	Antenna Type	Yagi	BOO will check Physically
	(iii)	Elements	Minimum 5	BOO will check Physically
	(iv)	Impedance	50 Ohms	Firm will submit OEM Certificate
	(v)	Gain	11 dBi or better	Firm will submit OEM Certificate
	(vi)	Polarization	Vertical/Horizontal	Firm will submit OEM Certificate
	(B) Omni Antenna (For 360^0 Coverage) (optional)			
	(i)	Frequency	320 to 470MHz (as per radio channel)	Firm will submit OEM Certificate
	(ii)	Impedance	50 Ohms	Firm will submit OEM Certificate
	(iii)	Gain	7 dBi or better	Firm will submit OEM Certificate
		External Clamps Fixture to be fitted on the tower to hold the antenna		
3.	**Low Loss weather proof cable**			
	(i)	Outer Diameter	Diameter 6.0mm or better, 4 twisted pairs of conductors	Firm will submit OEM Certificate
	(ii)	Conductor Type	23 AWG bare copper	Firm will submit OEM Certificate
	(iii)	Jack Material	PVC	Firm will submit OEM Certificate
	(iv)	Conductor Resistance	≤9.38Ω/100m	Firm will submit OEM Certificate
	(v)	Protection	Cable must consist of dual jack PVC coating for protection and outdoor purpose	Firm will submit OEM Certificate
4.	**FCBC 48V with Battery Bank (optional)**			
	(i)	Input Voltage	140-280AC	Firm will submit OEM Certificate
	(ii)	Output Voltage	12 /24/ 48 VDC	Firm will submit OEM Certificate
	(iii)	Output Current	10 AMP	Firm will submit OEM Certificate
	(iv)	Power Consumption	5 Amp Max	Firm will submit OEM Certificate

	(v)	Protection	Protection against spurious due to generator and AC input	Firm will submit OEM Certificate
		Battery Bank		
	(vi)	Type	SMF	BOO will check Physically
	(vii)	No. of Batteries	4	BOO will check Physically
	(viii)	Rating	12v, 26AHC	BOO will check Physically
	(ix)	Rack	Enclosed Rack to be supplied with all cables required to house the battery.	BOO will check Physically
5.	**Regulated Isolation Transformer (optional)**			
	(i)	The unit should ground all spikes and surges inputs into the power supply. It should be capable to ground the overvoltage as well as spikes infused by high voltage of generator		Firm will submit OEM Certificate
	(ii)	Input Voltage: 140V to 300V		BOO will check Physically
	(iii)	Output Voltage: 230V to 240V		BOO will check Physically
	(iv)	Indicator: Input and Output		BOO will check Physically
6.	**Co-axial Protection Device for RF Feeder**			
	(i)	Must be designed to protect RF feeder for 0 to 06 GHZF req or as required.		Firm will submit OEM Certificate
	(ii)	Surge Rating 20 KA		Firm will submit OEM Certificate
	(iii)	VSWR <1.1:1		Firm will submit OEM Certificate
	(iv)	Insertion Loss <0.1 dB		Firm will submit OEM Certificate
	(v)	Continuous Power >300W or as required for eqpt in use		Firm will submit OEM Certificate
	(vi)	Let through voltage for 3 KA, 8/20μs test pulse should be <+3V		Firm will submit OEM Certificate
	(vii)	Through put energy should be <0.5 μJ for 3KA, 8/20 μs test pulse		Firm will submit OEM Certificate
	(viii)	Termination: N type or BNC type.		Firm will submit OEM Certificate
7.	**Line Protection Unit (8 Port)**			
	(i)	LPU	High performance line protection unit for FXO or FXS modules	Firm will submit OEM Certificate
	(ii)	Protection	LPU must provide 3 level protection to ensure both effectiveness and long life.	Firm will submit OEM Certificate

	(iii)	Level 1	Gas arrestor on each conductor of 2 wire line.	Firm will submit OEM Certificate
	(iv)	Level 2	MOV	Firm will submit OEM Certificate
	(v)	Level 3	Tripolar Transient Surge arrestor	Firm will submit OEM Certificate
	(vi)	Ground	It is important that the installation of the LPU ensures all ground wires are short and well bonded so as to present a very low impendence to ground.	Firm will submit OEM Certificate
8.	**Chemical Earthing (Optional)**			
	(i)	Minimum 2 earth pits must be provided at each site. (This include Earthing which is mandatory for LPS. For LPS it is required that all earths must be interconnected)		Board will check practically and firm will submit OEM Certificate
	(ii)	Each earth pit must have 1 Nos copper rod of 5 feet length and 0.5-inch diameter jointed with copper breezing or rivets. Minimum 40 KG GAF/Gel Chemical Compound must be filled in the ground.		Board will check practically and firm will submit OEM Certificate
	(iii)	This Chemical must have low resistance <0.5 ohm-meter		firm will submit OEM Certificate
	(iv)	All the new and existing earth pit must be connected by 1.5 feet deep trenching using 99% pure copper strip (25x2) sq.mm or 50 Sq.mm Copper Cable for achieving equipotential earthing. Minimum distance between the earth pits must be 10ft.		Board will check practically and firm will submit OEM Certificate
	(v)	Earth pit must be apart from building by minimum 8 feet and also must be apart from other earth pit by minimum 15 feet		Board will check practically
	(vi)	Total Earth resistance of the pits must be 2 ohms		Board will check practically
	(vii)	There should be a earth distribution plate (200x50x5) mm for Power and Telecom Earth in the equipment room. These earth distribution plates must be connected from earth pit by copper strip (25x2) sq.mm or 50 Sq.mm Copper Cable		Board will check practically
	(viii)	All jointing should be properly clamped		Board will check practically
9.	**Ethernet Surge Accessories**			
	(i)	Operating Voltage	5V/60V	Firm will submit OEM Certificate
	(ii)	Capacitance	50pF	Firm will submit OEM Certificate
	(iii)	Surge Current	Greater than 2KA (8x20μs)	Firm will submit OEM Certificate

	(iv)	Impedance	<0.02Ω	Firm will submit OEM Certificate
	(v)	Suitable Protector to be provided for UTP and/or STP Cables and all 8 pins must be protected.		Firm will submit OEM Certificate